

# Submitting Plant Samples for Disease Diagnosis

Sherrie Smith  
Plant Diagnostician,  
Program Associate,  
Plant Health Clinic

Stephen Vann  
Assistant Professor,  
Urban Plant  
Pathologist

Despite all of the tender loving care that you give your plants, they may get sick. Plant diseases are caused by fungi, bacteria, viruses, viroids (virus-like organisms), phytoplasmas, protozoa, nematodes and parasitic plants. Although not categorized as diseases, the damage done by insects and mites may also severely impact plant health. Nutritional deficiencies and/or excessive amounts of nutrients may damage plants as well, sometimes mimicking disease symptoms and making diagnosis difficult.

Plant health is dependent on a number of factors. Know the proper soil type, water requirements and sun exposure needed for the crop you are growing. A pint of soil collected from the planting site and submitted to your local county Extension office for analysis prior to planting can be invaluable in preventing problems. When problems do occur, accurate disease identification is crucial in planning an effective control program to preserve or maintain a healthy plant. No plant is immune to all diseases. Every plant has its own set of disease problems, and an accurate diagnosis of the problem is the first step in solving the problem.

There are hundreds of diseases that attack plants in Arkansas. Some

diseases are rather easy to recognize, while some are difficult and will require laboratory observation before a diagnosis can be obtained. Your local county Extension agent is trained to recognize many of the common diseases that affect plants in Arkansas, and in many cases, a call to your county Extension office will be all that is necessary to obtain a diagnosis. However, if the county agent is unable to identify the “culprit,” then a sample of your plants, along with some background information, can be sent through the local county office to the Plant Health Clinic located at the Lonoke Agricultural Extension and Research Center. When the diagnosis has been completed, the report will be sent to the county agent.

An accurate disease diagnosis is the first essential step in designing an effective plant disease management program. Early detection followed by identification allows the grower to initiate steps to minimize economic or aesthetic losses. **The accuracy of the disease diagnosis is directly related to the type of plant sample submitted to the clinic.** You can take two steps to help make an accurate diagnosis.

First, a good sample should represent the range of symptoms that you observe. Symptoms include leaf

*Arkansas Is  
Our Campus*

Visit our web site at:  
<http://www.uaex.edu>

spots, fruit rots, wilting, yellowing, etc. Plants that are dry or completely rotted are of little use for a diagnosis, so the fresher the sample, the better the chances of an accurate disease identification. Collect your samples early in the week. This minimizes the possibility of the sample being held over the weekend at the post office.

In addition to the physical sample, the second thing that you can do to help ensure an accurate diagnosis is to provide important background information about the plant. Accurate information is extremely important in formulating a diagnosis and offering control suggestions to you. Please provide this information on Extension form *AGRI-420*, which is available at all of the county Extension offices. This sample submission form must accompany all samples sent to the Plant Health Clinic. Be sure to include such things as: (1) your name, phone number and e-mail address, (2) name of the plant, (3) description of the problem, (4) age of the plant, (5) sun exposure, (6) any drainage issues and (7) any fungicide, weed killers, insecticides and fertilizers used. The *AGRI-420* should be filled out as completely as possible to give a clear history and description of the problem. If possible, submit a photograph of the affected area in the landscape, garden or field. Photos are especially useful for lawn or field problems.

## Guidelines for Collecting and Submitting Plant Samples

**Selecting an appropriate plant sample is essential for an accurate diagnosis.** The *AGRI-420i* form outlines the appropriate methods for collecting, packaging and submitting samples. Please follow the guidelines below when collecting and submitting plant samples for disease diagnosis to your local county Extension office:

1. Submit only freshly collected specimens. If possible, collect several specimens showing a progression or range of symptoms. Keep specimens refrigerated until they are brought in for examination. Bring samples into the Extension office during the first part of the week.
2. Where specific plant parts are affected (leaf spots, root rots, fruit rots, flower blights, stem cankers), submit the affected part in as many stages of the disease as you can distinguish. If practical, submit the whole plant. Enclose specimens in plastic bags. **DO NOT ADD WATER OR WET PAPER TO THE BAG.** Additional moisture will speed decay.
3. For plants showing wilting, yellowing, stunting or general decline, collect the entire plant including the root system. Do not pull the plant out of the ground. Dig the plant carefully so as to disturb the root system as little as possible. Shake away excess soil. **DO NOT WASH SOIL FROM THE ROOT SYSTEM.** Enclose the root system in a plastic bag and seal it at the base of the plant stem to prevent soil spillage. Then enclose the entire plant in another plastic bag and seal. **DO NOT ADD ADDITIONAL MOISTURE.**
4. For leaf spots, submit leaves showing various stages of infection. If possible, bring in twigs or branches with leaves still attached. Enclose leaves in a plastic bag. Individual leaves may be placed between layers of DRY paper towels.
5. For lawn and turf diseases, submit a 3- to 4-inch diameter plug taken where the healthy and diseased areas meet so the sample will contain both diseased and healthy turf. Take the plug 2 to 3 inches deep and include roots and the adhering soil. Samples can be dug with a garden trowel or small spade. Enclose sample plugs in a plastic bag. **DO NOT ADD ADDITIONAL MOISTURE.**

For specific additional information regarding collecting and submitting plant samples for disease examination, contact your local county Extension office.

Printed by University of Arkansas Cooperative Extension Service Printing Services.

**SHERRIE SMITH** is plant diagnostician and program associate located at the Plant Health Clinic, Lonoke, and **DR. STEPHEN VANN** is assistant professor and urban plant pathologist, located in Little Rock. Both are employees of the University of Arkansas Division of Agriculture.

Issued in furtherance of Cooperative Extension work, Acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, Director, Cooperative Extension Service, University of Arkansas. The Arkansas Cooperative Extension Service offers its programs to all eligible persons regardless of race, color, national origin, religion, gender, age, disability, marital or veteran status, or any other legally protected status, and is an Affirmative Action/Equal Opportunity Employer.